Bite force in *Fukomys* mole-rats (bathyergidae, rodentia).

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The obligatory subterranean African mole-rats are chisel-tooth diggers which excavate extensive tunnel systems along which they forage for geophytes. These activities as well as inter- and intraspecific agonistic encounters require an efficient jaw apparatus. Bite force was measured directly in several species of the *Fukomys* radiation from the Zambezian region to assess the extent of variation in biting performance. Maximal bite force data were collected using a Kistler isometric force transducer. In vivo measurements were compared with data obtained from a static bite model. Data were related to skull size and skull shape variation, which was estimated with landmark-based geometric morphometrical tools. Results: 1. we show that the giant mole-rat (*Fukomys mechowii*) has the highest mass-specific bite force among extant mammals. 2. Maximal bite force measurements in cross-breeds between chromosomal species of the *F. micklemi* clade show a negative heterotic effect, larger animals producing the lower bite-force. 3. Interspecific comparisons among *Fukomys* show subtle but significant differences in cranial shape, which may help explain observed differences in maximal bite force between *Fukomys* species. Taken together our results therefore provide evidence that considerable variation in the skull size and shape and likely in the whole jaw apparatus among *Fukomys* is present in spite of the thresholds set by the underground environment. These changes in the form of the skull are related to biting performance and hence may have an adaptive value. Studies on intraspecific variation in bite force related to work behavior (cf. Desmet et al. in this volume) may help to clarify the evolutionary mechanisms.

Key words: adaptation, African mole-rats, biting performance, C*ryptomys*, geometric morphometrics